IN THE CLAIMS

Claims 1-57 (Canceled).

58. (Currently Amended) ~~The method of Claim 57 further comprising:~~ A method of calibrating a radiation detection system comprising:

providing a radiation source that emits radiation, wherein the source is chosen from the group consisting of a uniform point-like source, a line-like source, a spherical source, a rod-like source, a collimated spot source, a slit source, a slot source, a grid pattern source, a planar flood field, and a shaped three-dimensional flood field,

measuring an energy-dependent modulation transfer function of the detection system, and

measuring the level of radiation emitted from the source that is detected by the detection system, and

calibrating the detection system by evaluating the detected radiation and balancing the system based upon the detected radiation and the energy-dependent modulation transfer function of the detection system.

~~calibrating the system by accounting for both the detected radiation and the energy-dependent modulation transfer function~~.

59. (Currently Amended) A method of estimating the effects of tissue attenuation on the intensity and energy distribution of ~~a~~ an x-ray beam comprising:

calibrating an energy-resolving detector array by determining its energy-dependent modulator transfer function,

aligning the calibrated energy-resolving detector array with the x-ray beam,

measuring a first position-dependent, energy-dependent intensity profile of the x-ray beam at the detector array,

transmitting the x-ray beam through a patient,

measuring a second position-dependent, energy-dependent intensity profile of the x-ray beam at the detector array immediately after the beam has been transmitted through the patient, and

comparing the first and the second position-dependent, energy-dependent intensity profiles of the beam.